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Conference Abstract

Representation of Object Provenance for Research on Natural Science Objects: Samples, parts and derivatives in DINA-compliant collection data management

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Abstract

Collection objects in natural science collections span a diverse set of object types of substantially different origin, physical composition, and relevance for different fields and methodologies of research and application. Object provenance is often characterized by elaborate series of interventions from collecting or observing originals in a natural state to generating derived objects that can be physically persistent or are suitable for a given use. This sequence of events gives rise to intermediate objects or object states that can be of a persistent or ephemeral nature in their own right. Detailed metadata on object provenance is vital to enable informed use of collection objects for research and other application areas. Providing the ability to generate, maintain, update and access such accounts is an important requirement for Collection Management Software (CMS).

DINA (*Digital Information System for Natural History Data*, Glöckler et al. 2020)-compliant collection management software meets this challenge by using process- and state-based

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representation of object histories and modular application architecture as the main conceptual and architectural principles, respectively (Bölling et al. 2021).

In applying these principles, we showcase how object provenance can be represented in the DINA system in cases where

- multiple objects, possibly of varying types, are derived from a single object,
- objects consist of parts of different biological individuals,
- object histories involve different types of objects such as living biological individuals, samples, and preserved specimens.

We highlight how the abstractions and categories used in the DINA model can be used to meet a variety of challenging use cases for representing collection object provenance. For instance, while the connections and relationships between living, preserved, and even destructively processed samples can be documented in DINA, these are ordinarily difficult to accommodate in a single information system.

Keywords

data modelling, biodiversity, natural history collections, software development, open source

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